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Seasonal patterns of prices and production for Louisiana farm products

Lonnie L. Fielder

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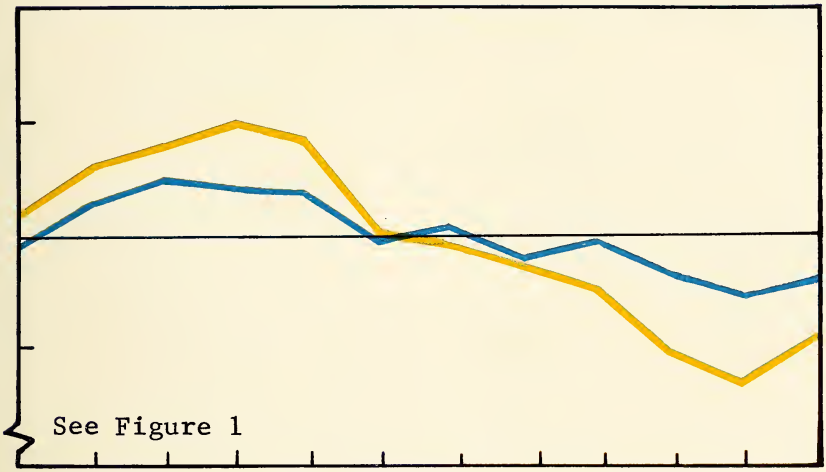

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Seasonal Patterns of Prices and Production For Louisiana Farm Products

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Variations in the prices of crops and livestock and in the production of livestock and livestock products generally are composed of four principal elements. These are trend, cyclical, seasonal, and irregular changes. These four types of changes are also referred to as the major "time series components"; that is, they are four types of changes that normally occur in economic data such as prices and production.

Trend indicates the overall direction and rate of movement, either up or down, over a given period of time. The cyclical component reflects the alterations in the general economy such as prosperity and depression. The seasonal component reflects movements among months or seasons. The irregular component refers to the part unexplained by trend, cyclical, or seasonal movements. It may be referred to as "random" or accidental changes.

The major purpose of this study is to analyze and present the seasonal patterns for prices and production of livestock, and for prices of crops, in Louisiana. The analysis consists of (1) presenting the average seasonal patterns for the three time periods 1951-1962, 1951-1953, and 1960-1963; (2) indicating the significant shifts in seasonal movements during the period 1951-1953 to 1960-1962; and (3) presenting the 1963 projected seasonal patterns.

A knowledge of seasonal movements of prices can be a valuable guide in deciding when to sell farm commodities and will be of interest to farmers, Agricultural Extension Service, Farmers Home Administration, Soil Conservation Service, vocational agriculture teachers, farm loan agencies, and others who are interested in planning a farm business for greater profit.

Indexes of seasonal variations computed in this study include:

(1) Prices received by farmers for beef cattle, calves, hogs, sheep, lambs, wool, eggs, all chickens, farm chickens, broilers, turkeys, wholesale milk, cotton, rice, sweet potatoes, soybeans, corn, wheat, oats, all hay, alfalfa hay, lespedeza hay, and grain sorghum.

(2) The following production quantities: number of cattle slaughtered, number of calves slaughtered, number of hogs slaughtered, egg production, eggs per 100 layers, and number of layers.

(3) The following livestock-feed price ratios: cattle-corn ratio, calf-corn ratio, and hog-corn ratio.

Data on individual farm commodities in this report are averages for Louisiana as reported by the Statistical Reporting Service, United States Department of Agriculture.

Procedure for Computing Seasonal Index

The seasonal index numbers in this study are defined as the per cent of the annual average price or quantity. That is, the indexes show the value

for each month as a percentage of the average for the year. An index of 110 for beef cattle prices in May, for example, means that the seasonal price of beef cattle in that month is 10 per cent greater than the average for the entire 12 months.

The seasonal indexes presented here were derived by the Shiskin-Eisenpress adaptation of the ratio-to-moving average.[1] This method consists of the following steps: (1) computation of a centered 12-month moving average; (2) computation of ratios, dividing the original data by the centered moving average; (3) replacing extreme ratios by more representative ones; (4) computation of a 3-term average of the ratios; (5) computation of a preliminary seasonally adjusted series by dividing the original data by the ratios; (6) computation of a weighted 15-month moving average of the preliminary seasonally adjusted series to obtain the trend-cycle component; (7) dividing the preliminary seasonally adjusted series by the trend-cycle component to get the irregular component; and (8) dividing the original data by the trend-cycle and irregular components to get the seasonal component.

"Average amplitudes" of the irregular movements were also computed. Average amplitudes are average month-to-month percentage changes, disregarding direction of change. The magnitude of the irregular amplitudes enables one to judge the importance and "predictability" of the seasonal index.

Seasonal Variations in Prices and Production of Individual Farm Products

The method described above was used to analyze the seasonal price and production patterns for the major farm commodities in Louisiana. The seasonal indexes are shown in Tables 1 through 32 and in Figures 1 through 32. Each table includes the following: (1) 1951-1962 average seasonal indexes; (2) 1951-1953 average seasonal indexes; (3) 1960-1962 average seasonal indexes; (4) 1963 projected seasonal indexes; (5) average irregular amplitude for the 1951-1962 period; and (6) correlation coefficient between the 1951-1953 average seasonal indexes and the 1960-1962 average seasonal indexes.

Prices

Beef cattle. The seasonal pattern of price variation for beef cattle in Louisiana typically shows an April peak and a November low, as indicated by the 1951-1962 average seasonal indexes (Table 1 and Figure 1). The principal change in seasonality of beef cattle prices during the 1951-1962 period was a reduction in the degree of variation. Although beef cattle prices usually are relatively low from August to December and relatively high in other months, this pattern has become less distinct in recent years. There was no significant difference in the seasonal pattern during this period, as indicated by a correlation coefficient of 0.963 between the average seasonal indexes for

[1]For a more detailed description of this method, see Gale, Hazen F., *Seasonal Variation in Farm Food Prices and Price Spread*, Miscellaneous Publication No. 840, AMS, MERD, U.S. Department of Agriculture, Washington, D.C., January 1961.

1951-53 and 1960-62.[2] The peak seasonal price shifted from April to March, but the low remained in November. The 1963 seasonal pattern will be similar to that for the 1960-62 average.

Veal calves. The seasonal prices of veal calves during 1951-1962 were similar to those for beef cattle, with a peak normally occurring in April, a low normally occurring in November, and a reduction in the degree of variation (Table 2 and Figure 2). The peak seasonal price, however, shifted from April in 1951-53 to May in 1960-62. The 1963 projected indexes indicate that the peak and low will remain in May and November, respectively. There appears to be more stability (less variation) in recent years.

Hogs. Hog prices usually are highest in August and lowest in January (Table 3 and Figure 3). Two principal changes occurred in the seasonality of hog prices during the 1951-1962 period. First, the seasonal pattern changed significantly from 1951-53 to 1960-62. Second, there was a reduction in the degree of variation.

Sheep and lambs. Prices of Louisiana sheep and lambs show about the same typical seasonal pattern. The high prices of each are reached in late winter and early spring (Tables 4 and 5 and Figures 4 and 5). The seasonal pattern of sheep prices did not change very much over the 1951-1962 period. The seasonal pattern of lamb prices, however, changed significantly from 1951-53 to 1960-62. There was a reduction in the degree of variation for seasonal lamb prices from 1951 to 1962, but not for the seasonal prices of sheep.

Wool. There were several significant changes in the seasonal pattern of wool prices during the 1951-1962 period (Table 6 and Figure 6). On the average, the peak seasonal price is reached in July and the low in January. The 1963 seasonal indexes indicate that wool prices will rise to a peak in August. The 1963 projected indexes are not very reliable, as indicated by the high average irregular amplitude of 5.47 per cent.

Eggs. The seasonal pattern of price variation for eggs typically shows a December peak and a May low (Table 7 and Figure 7). There was no significant change in the seasonal pattern from 1951-53 to 1960-62, but the low shifted from April to June. The degree of variation in the seasonality of egg prices was much less in 1960-62 than in 1951-53. The seasonal prices in 1963 will decline from a high in January to a low in May or June and then rise continuously to December.

Chickens. During 1951-1962, prices received by Louisiana farmers for all chickens were usually highest in March and lowest in October (Table 8 and Figure 8). As seen in Table 8, the seasonal pattern changed significantly during this period. The 1960-62 seasonal indexes were inversely correlated with the 1951-53 indexes, indicating a highly significant change in the seasonal pattern. The degree of variation in the seasonal price increased considerably over this period. It is projected that the seasonal price of all chickens will be highest in February of 1963 and decline to a low in October.

[2]A significant change in the seasonal pattern is indicated by a correlation coefficient less than .708, the value required for the 1 per cent level of probability.

The seasonal price movements of farm chickens and broilers are similar to those for all chickens (Tables 9 and 10 and Figures 9 and 10). There were several significant changes in the seasonal pattern during the 1951-1962 period, with the 1960-61 seasonal pattern being highly different from that of 1951-53. The major differences between the seasonality of farm chickens and broilers are: (1) The seasonal prices of farm chickens, on the average, show much less variation; and (2) the degree of variation in seasonal prices has increased much more for broilers than for farm chickens.

Turkeys. The seasonal pattern of turkey prices has also been similar to that of all chickens (Table 11 and Figure 11). Although there were several significant changes in the seasonal movements during 1951-1962, the degree of variation remained fairly constant.

Milk. On the average, wholesale milk prices rise continuously from June until a peak is reached in November and then decline to a low the following May or June (Table 12 and Figure 12). There was little change in the seasonal pattern over the 1951-1962 period, but the degree of variation in the seasonal indexes decreased slightly.

Cotton. The seasonal pattern of price variation for cotton in Louisiana typically shows a September peak and a January low, as indicated by the 1951-1962 average seasonal indexes (Table 13 and Figure 13). The principal changes in seasonality of cotton prices during this period were (1) a highly significant change in the seasonal pattern from 1951-53 to 1960-62; (2) an increase in the degree of variation; and (3) a shift in the seasonal highs from June to September and in the seasonal lows from December to March. The projected seasonal indexes for 1963 indicate that the high and low will again be in September and March, respectively.

Rice. On the average, rice prices rise moderately during the season beginning in August and reach a peak about the following March (Table 14 and Figure 14). The seasonal pattern of rice did not change significantly from 1951-53 to 1960-62. There was a reduction in the degree of variation from 1951-53 to 1960-62. The peak seasonal price shifted from February in 1951-53 to April in 1960-62, and the low shifted from September to August. The seasonal pattern in 1963 will be similar to that of 1960-62, with a high projected for April and a low projected for August.

Sweet potatoes. There is a high degree of variation in the seasonal movement of sweet potato prices. Sweet potato prices normally rise sharply from a low in October to a peak the following July (Table 15 and Figure 15). The seasonal pattern did not change significantly from 1951-53 to 1960-62. The degree of variation from 1951-53 to 1960-62 also remained about the same. The low seasonal price shifted from October to November, but the peak seasonal price remained in July. The 1963 seasonal movement will be similar to that of 1960-62, with a peak in June and a low in October. However, it must be noted that the seasonal price indexes for sweet potatoes are highly unreliable, as indicated by the extremely large irregular amplitude of 10.15 per cent.

Soybeans. The seasonal pattern of soybean prices in Louisiana typically shows a May peak and an October low, as indicated by the 1951-1962 average seasonal indexes (Table 16 and Figure 16). There was no significant change

in the seasonal pattern during this period, but there was a slight reduction in the degree of variation. The 1963 projected indexes indicate that the high will be in May and the low will be in September.

Corn. On the average, corn prices have risen moderately during the season beginning in October and have reached a peak about the following May (Table 17 and Figure 17). The seasonal movement did not change significantly from 1951-53 to 1960-62. The lowest seasonal price was in September in 1951-53, but shifted to October in 1960-62. The peak seasonal price shifted from May to June. The 1963 projected indexes indicate that corn prices will rise moderately from January to a peak in June and decline to a low in October.

Wheat. Wheat prices were first reported in 1957 for Louisiana. Since that time there has been little variation in the seasonal movements of wheat (Table 18 and Figure 18). The highest seasonal price was normally in January, but shifted to December by 1962. The low was usually in June, but shifted to July by 1962.

Oats. Prices received for oats in Louisiana normally reach a peak in November, remain close to this level through the following March, and then decline to a low in June (Table 19 and Figure 19). From 1951 to 1962 there was no significant change in the seasonal pattern. However, the peak price shifted from November-December to October, and there was a slight reduction in the degree of variation in the seasonal prices.

Hay. Prices of all hay are normally highest in the winter and lowest in the summer (Table 20 and Figure 20). The seasonal pattern in 1960-62 was not significantly different from that of 1951-53. The peak seasonal price shifted from March to January during this period and the low remained in July.

The seasonal prices of alfalfa hay and lespedeza hay follow the same pattern as that for all hay (Tables 21 and 22 and Figures 21 and 22). The seasonal pattern of lespedeza hay prices, however, changed significantly from 1951-53 to 1960-62.

Grain sorghum. Grain sorghum prices generally are highest from May to July and lowest from October to December (Table 23 and Figure 23). There was a significant change in the seasonal pattern from 1951-53 to 1960-62. There is less seasonal variation in grain sorghum prices than in other feed grains.

Production

Cattle and calves slaughtered. The number of cattle and calves slaughtered in Louisiana normally reaches a peak in September-October and a low in February (Tables 24 and 25 and Figures 24 and 25). From 1951-53 to 1960-62, however, the peak shifted to August. Two differences are noted in the seasonal pattern of cattle slaughtered and calves slaughtered: (1) There was a reduction in the degree of variation for calves but not for cattle from 1951-53 to 1960-62; (2) the seasonal pattern of cattle changed significantly from 1951-53 to 1960-62, but the seasonal pattern of calves remained about the same.

Hogs slaughtered. On the average, the number of hogs slaughtered reaches a peak in December and a low in July (Table 26 and Figure 26). There was no significant change in the seasonal pattern from 1951-53 to 1960-62. But there was a large reduction in the degree of variation between these two time periods.

Poultry and eggs. The seasonal patterns of egg production, eggs per 100 layers, and number of layers did not change significantly during the 1951-1962 period (Tables 27, 28, and 29 and Figures 27, 28, and 29). Egg production and eggs per 100 layers are normally highest in March or April and lowest from November to January. There have been large reductions in the degree of variation of the seasonal indexes of eggs. The number of layers is usually highest in December or January and lowest in June or July.

Livestock-Feed Price Ratios

The seasonal movements of the cattle-corn, calf-corn, and hog-corn ratios are shown in Tables 30 through 32 and Figures 30 through 32. These ratios serve as guides in determining whether to sell corn or feed it to cattle, calves, and hogs. High ratios indicate that it is more profitable to feed the corn. Conversely, low ratios indicate that it is more profitable to sell the corn.

The cattle-corn and calf-corn ratios typically reach a peak about April and a low about July. There were several significant changes in the seasonal patterns of these two ratios during the 1951-1962 period. The peaks for these two ratios shifted to January-February and the lows shifted to June.

The hog-corn ratio normally reaches its peak in September-October and its low in March. The seasonal pattern changed significantly from 1951-53 to 1960-62. The peak shifted from August to October during the 1951-1962 period and the low shifted from February to June.

The 1963 projected seasonal indexes indicate that the peak will occur in January-February and the low in June-July for the cattle-corn and calf-corn ratios. The projected indexes for the hog-corn ratio indicate the peak will occur in October and the low in June.

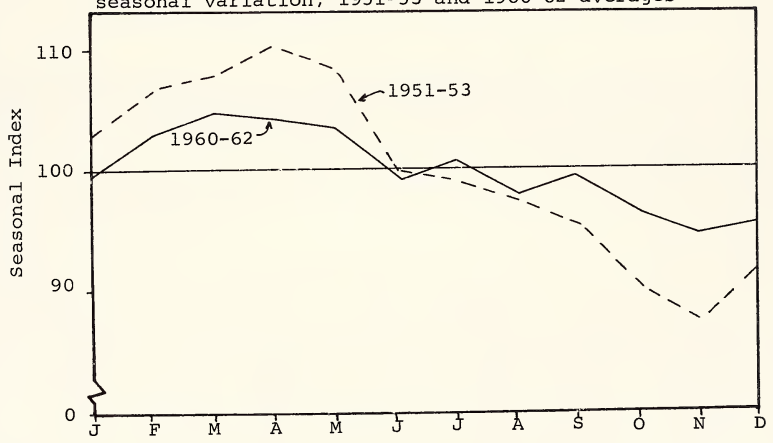
Table 1. Beef cattle prices: Index numbers of seasonal variation, 1951-1962 and 1963 projected

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1951-62[1]	99.9	104.0	105.7	106.8	106.0	100.5	99.9	98.3	97.9	95.0	92.1	93.9
1951-53	102.7	106.7	108.0	110.1	108.3	100.5	99.2	97.5	95.9	91.7	87.9	91.6
1960-62[2]	99.3	103.0	104.8	104.2	103.8	99.8	100.6	97.9	99.3	96.7	94.8	95.9
1963	100.5	104.0	104.4	102.8	103.6	98.3	100.4	97.7	100.0	96.9	94.7	96.7

[1]Average irregular amplitude = 1.69. Average amplitudes are average month-to month percentage changes, disregarding direction of change. The magnitude of the irregular amplitudes enables us to judge the importance and "predictability" of the seasonal index. The irregular amplitudes are also shown in footnote 1 in Tables 2 through 32.

[2]r = .963, the correlation coefficient between the 1951-53 and 1960-62 average seasonal indexes. An r value $\leq$ .708 indicates a significant difference in the seasonal pattern for these two time periods. The r values are also shown in footnote 2 in Tables 2 through 32.

Figure 1. Beef cattle prices: Index numbers of seasonal variation, 1951-53 and 1960-62 averages



Note: In comparing the seasonal movements for the 1951-53 average and the 1960-62 average, note the following: (1) Change in pattern; that is, the movements up and down between months; (2) Shifts in peaks and lows between the two periods; and (3) Change in the degree of variation between the two periods. The same comparisons can be made for Figures 2 through 32.

Table 2. Veal calf prices: Index numbers of seasonal variation, 1951-1962 and 1963 projected

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1951-62[1]	100.9	103.5	104.6	106.5	106.4	101.8	101.3	98.6	96.3	93.6	91.7	94.8
1951-53	103.5	106.9	106.7	108.3	107.4	102.5	101.2	99.4	93.2	89.6	88.2	93.1
1960-62[2]	100.5	102.0	103.0	104.4	105.0	99.9	100.7	96.8	97.9	96.0	95.1	98.4
1963	102.2	102.6	103.2	103.5	103.8	98.1	98.8	96.4	98.6	97.0	95.6	100.2

[1]Average irregular amplitude = 1.70.

[2]r = .917.

Figure 2. Veal calf prices: Index numbers of seasonal variation, 1951-53 and 1960-62 averages

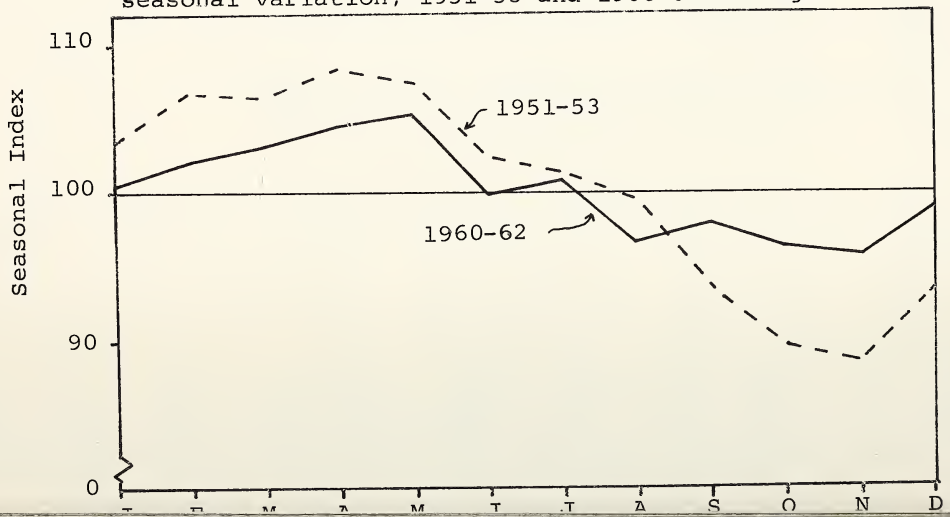


Table 3. Hog prices: Index numbers of seasonal variation, 1951-1962 and 1963 projected

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1951-62[1]	94.7	96.9	97.3	100.0	101.7	102.9	104.0	104.4	102.7	100.8	98.7	95.9
1951-53	94.8	96.8	97.3	98.4	102.6	103.8	104.8	106.5	102.4	100.8	98.2	93.7
1960-62[2]	95.7	96.4	99.4	100.3	100.3	98.9	101.6	102.3	102.3	101.7	101.4	99.7
1963	98.0	97.2	99.5	99.1	99.1	97.2	100.8	101.6	103.2	102.3	101.1	100.7

[1]Average irregular amplitude = 1.96 [2]r = .623

Figure 3. Hog prices: Index numbers of seasonal variation, 1951-53 and 1960-62 averages

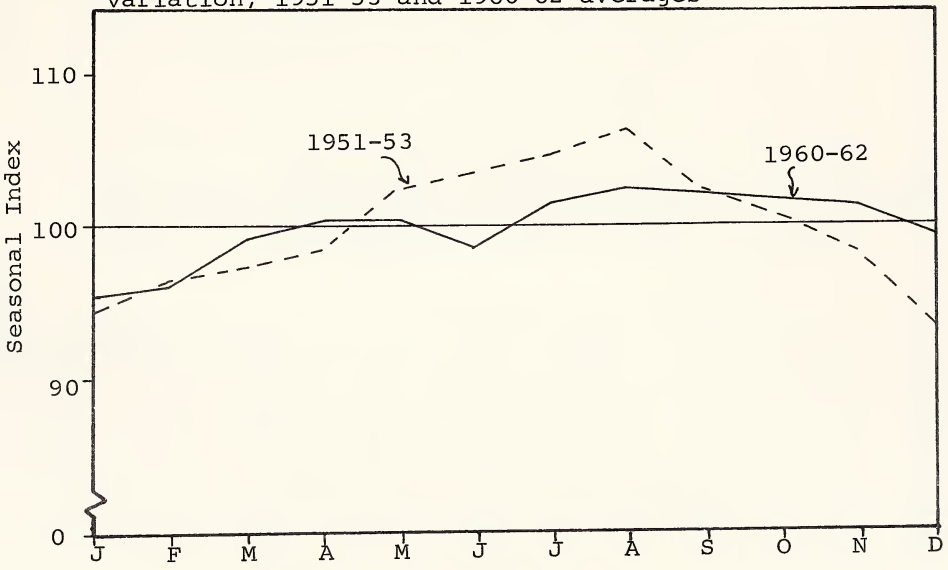


Table 4. Sheep prices: Index numbers of seasonal variation, 1951-1962 and 1963 projected

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1951-62[1]	102.7	103.1	104.8	105.5	103.8	98.9	97.4	96.3	95.4	95.3	97.8	98.9
1951-53	104.4	104.3	106.4	105.0	106.3	96.8	95.9	95.9	96.5	93.9	96.6	98.0
1960-62[2]	103.0	105.0	105.9	104.6	100.9	97.9	98.1	95.2	95.4	95.9	97.8	100.2
1963	103.1	106.9	106.9	104.8	99.9	98.3	98.7	94.1	94.5	95.4	97.2	100.0

[1]Average irregular amplitude = 1.95 [2]r = .901

Figure 4. Sheep prices: Index numbers of seasonal variation, 1951-53 and 1960-62 averages

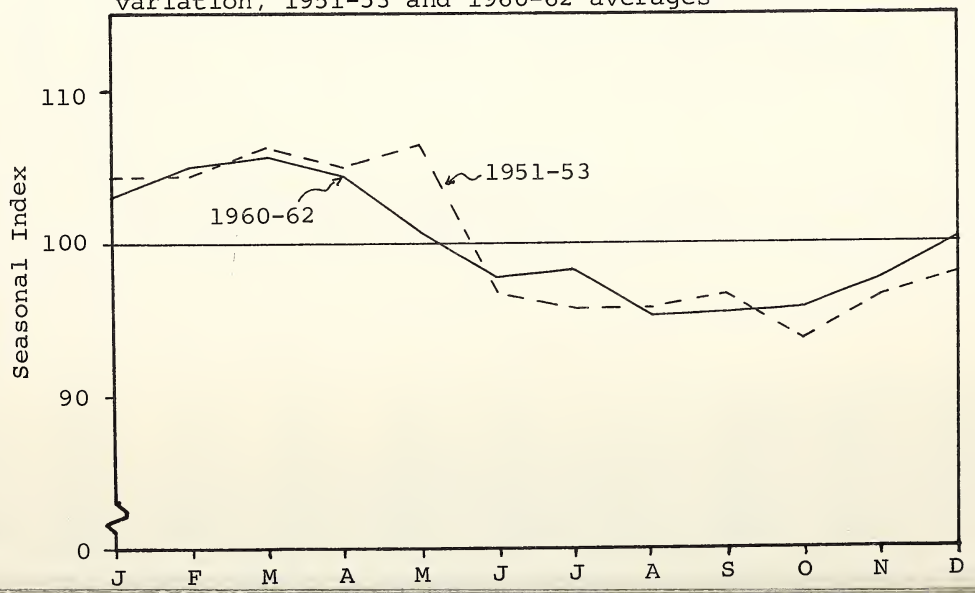


Table 5. Lamb prices: Index numbers of seasonal variation, 1951-1962 and 1963 projected

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1951-62[1]	98.0	100.3	102.7	104.1	103.0	102.3	101.8	100.6	98.9	96.6	96.5	95.2
1951-53	99.2	102.5	104.7	104.2	103.6	101.6	103.8	101.2	99.4	92.9	93.3	93.7
1960-62[2]	98.1	98.8	101.0	102.6	100.6	103.0	100.5	101.1	100.2	98.6	98.2	97.5
1963	98.4	99.2	100.9	103.6	98.6	103.3	99.3	101.9	101.3	98.4	97.4	97.6

[1]Average irregular amplitude = 1.87 [2]r = .716

Figure 5. Lamb prices: Index numbers of seasonal variation, 1951-53 and 1960-62 averages

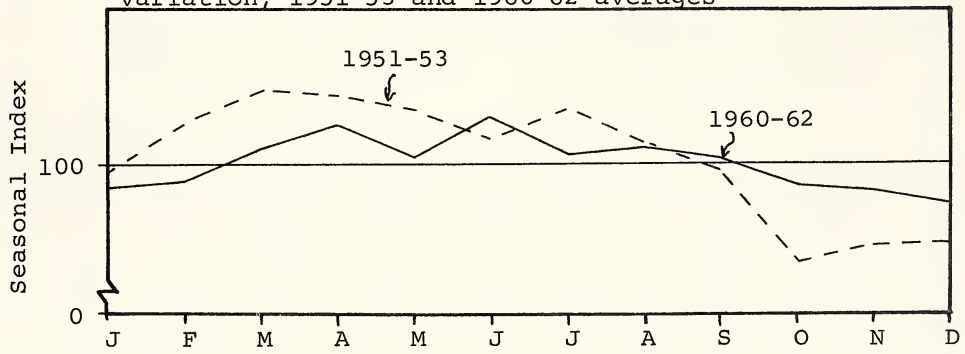


Table 6. Wool prices: Index numbers of seasonal variation, 1951-1962 and 1963 projected

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1951-62[1]	94.7	98.3	96.1	97.1	98.2	98.9	108.9	100.5	101.3	99.6	105.5	100.9
1951-53	98.0	97.6	99.0	99.5	97.6	101.2	111.4	98.0	97.7	100.1	100.1	99.8
1960-62[2]	90.5	98.7	91.6	96.3	97.5	101.7	109.4	108.7	101.2	99.0	101.7	103.8
1963	87.5	100.0	96.4	95.6	96.7	99.6	107.5	110.9	101.0	98.1	101.4	105.3

[1]Average irregular amplitude = 5.47 [2]r = .527

Figure 6. Wool prices: Index numbers of seasonal variation, 1951-53 and 1960-62 averages

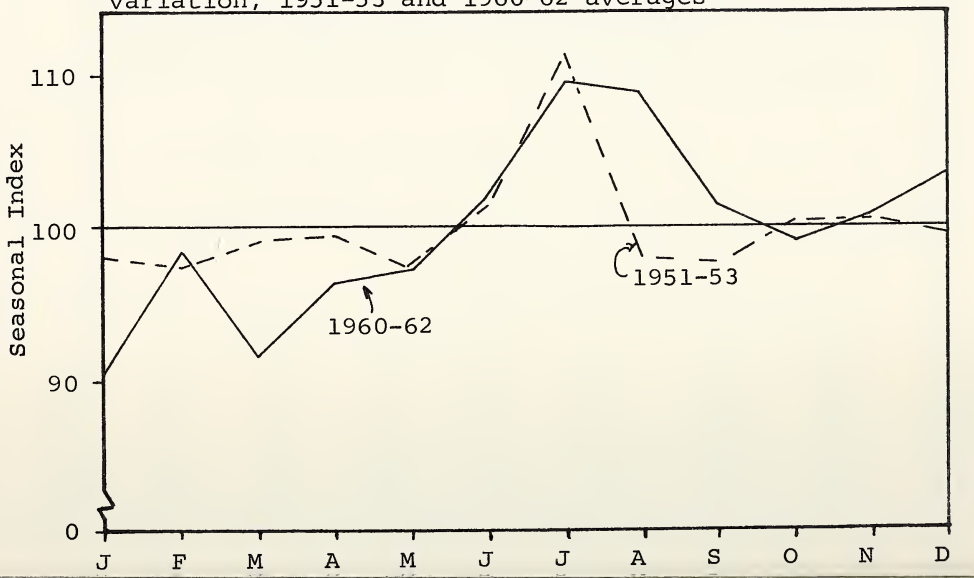


Table 7. Egg prices: Index numbers of seasonal variation, 1951-1962 and 1963 projected

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1951-62[1]	113.4	101.6	89.8	87.1	84.8	86.1	91.2	97.6	103.9	110.5	113.9	120.2
1951-53	114.2	94.0	80.1	79.4	79.9	83.5	91.7	100.5	108.4	117.1	121.8	129.3
1960-62[2]	112.0	105.0	96.1	92.9	88.7	88.2	91.1	95.5	101.5	107.2	108.7	113.1
1963	113.0	106.6	96.8	92.8	88.8	88.8	90.9	96.4	102.7	105.5	107.2	110.3

[1]Average irregular amplitude = 2.06 [2]r = .882

Figure 7. Egg prices: Index numbers of seasonal variation, 1951-53 and 1960-62 averages

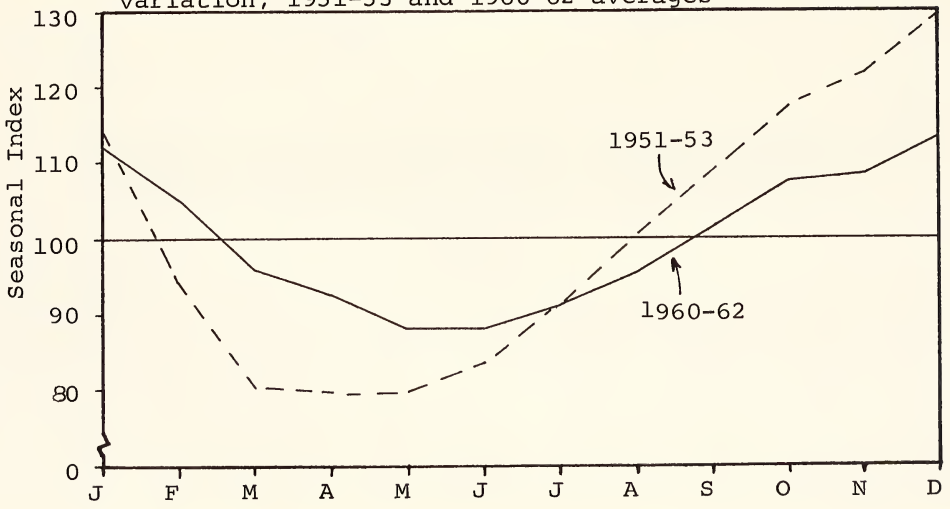


Table 8. Chicken prices (all): Index numbers of seasonal variation, 1951-1962 and 1963 projected

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1951-62[1]	101.3	103.4	106.2	101.3	101.4	101.6	102.0	100.9	97.2	93.7	95.7	95.3
1951-53	100.0	97.7	98.8	97.0	96.2	98.1	102.9	105.3	104.5	99.4	101.1	99.1
1960-62[2]	108.5	114.8	112.4	104.9	100.9	96.6	94.5	94.4	91.8	89.2	91.7	100.2
1963	110.9	119.5	115.1	106.0	98.8	92.5	91.0	94.5	92.9	88.2	91.2	99.4

[1]Average irregular amplitude = 2.83 [2]$r = -.536$

Figure 8. Chicken prices (all): Index numbers of seasonal variation, 1951-53 and 1960-62 averages

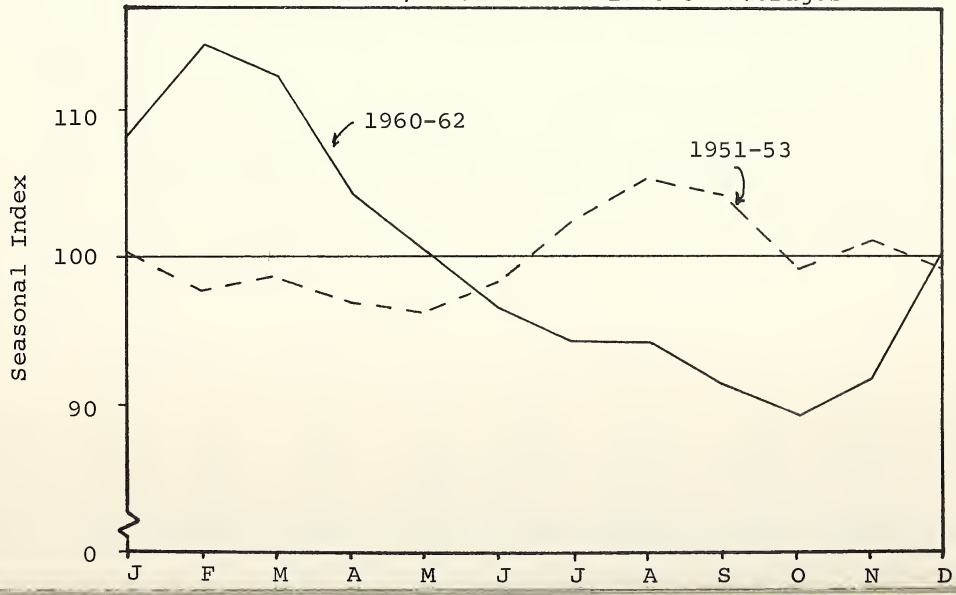


Table 9. Farm chicken prices: Index numbers of seasonal variation, 1951-1962 and 1963 projected

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1951-62[1]	100.8	101.1	101.2	101.5	101.3	99.2	98.8	99.0	98.0	98.9	99.8	100.2
1951-53	102.6	99.5	99.6	98.6	100.4	98.3	97.1	100.6	99.3	99.8	103.0	101.0
1960-62[2]	102.8	104.3	103.6	104.1	102.8	98.9	96.4	96.3	94.7	96.9	98.3	100.8
1963	104.3	105.2	103.8	104.8	105.7	98.9	93.4	95.3	95.9	95.0	97.4	100.0

[1]Average irregular amplitude = 2.45

[2]r = .142

Figure 9. Farm chicken prices: Index numbers of seasonal variation, 1951-53 and 1960-62 averages

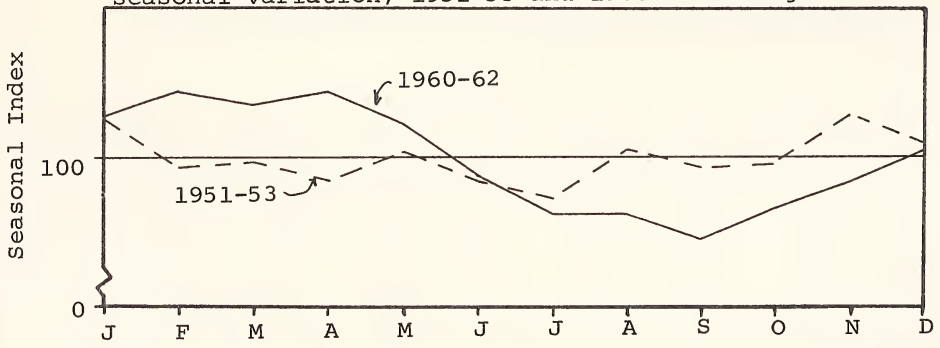


Table 10. Commercial broiler prices: Index numbers of seasonal variation, 1951-1962 and 1963 projected

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1951-62[1]	101.1	103.5	106.5	101.0	100.6	101.4	102.8	101.8	97.8	93.4	94.8	95.3
1951-53	100.0	97.9	98.7	95.8	93.9	97.7	104.8	107.3	106.7	99.2	99.1	98.9
1960-62[2]	108.2	115.5	113.1	104.9	100.0	95.9	94.4	95.1	91.8	88.6	90.9	101.5
1963	111.3	120.5	116.0	105.8	98.0	92.1	90.9	94.7	92.7	87.6	90.3	100.0

[1]Average irregular amplitude = 3.16 [2]r = -.404

Figure 10. Commercial broiler prices: Index numbers of seasonal variation, 1951-53 and 1960-62 averages

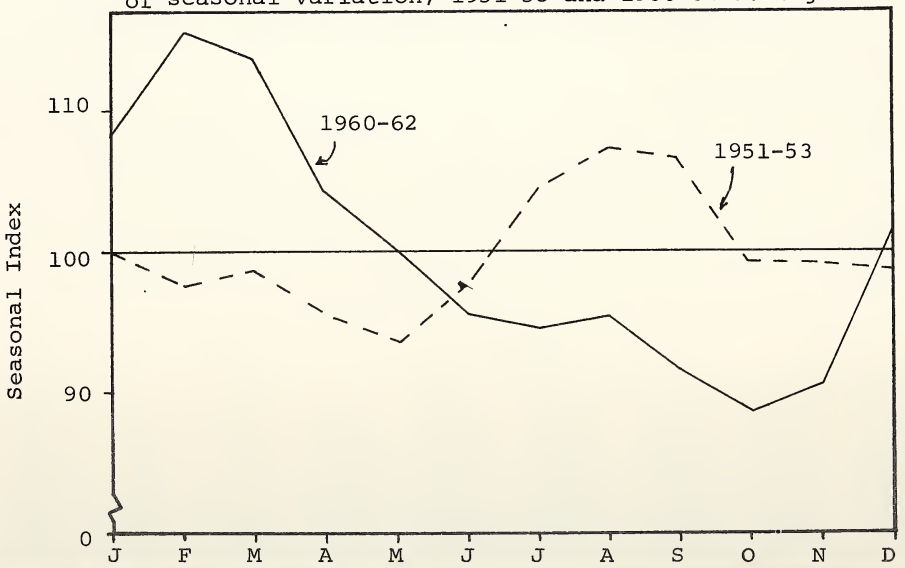


Table 11. Turkey prices: Index numbers of seasonal variation, 1951-1962 and 1963 projected

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1951-62[1]	102.0	101.0	101.4	101.6	100.2	97.8	98.2	97.7	98.1	100.3	99.5	102.1
1951-53	104.0	102.1	99.8	100.1	98.1	96.0	95.6	95.9	98.1	104.6	102.3	103.3
1960-62[2]	103.2	101.3	104.6	105.0	101.7	98.2	98.2	96.4	96.1	95.7	98.4	101.4
1963	106.1	101.8	107.3	107.8	100.5	97.6	97.7	95.0	95.1	94.3	98.2	98.0

[1]Average irregular amplitude = 2.18 [2]r = .254

Figure 11. Turkey prices: Index numbers of seasonal variation, 1951-53 and 1960-62 averages

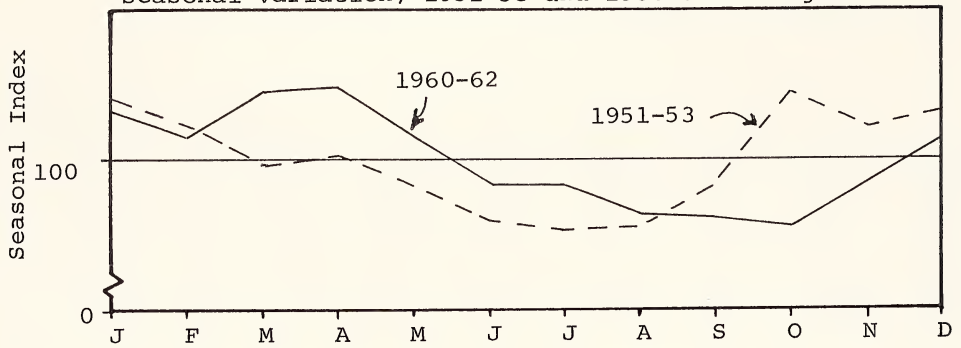


Table 12. Wholesale milk prices: Index numbers of seasonal variation, 1951-1962 and 1963 projected

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1951-62[1]	104.7	102.8	97.7	94.4	94.2	93.8	95.7	97.6	102.0	104.9	106.8	105.3
1951-53	103.9	101.6	97.1	93.9	93.4	93.4	94.6	97.4	102.1	106.1	108.9	107.8
1960-62[2]	105.8	103.9	98.4	96.0	95.6	96.2	96.9	97.1	100.2	102.8	104.3	102.8
1963	106.1	103.6	98.7	97.5	96.5	97.3	96.2	96.9	99.5	102.2	104.0	101.5

[1]Average irregular amplitude = 1.13

[2]r = .899

Figure 12. Wholesale milk prices: Index numbers of seasonal variation, 1951-53 and 1960-62 averages

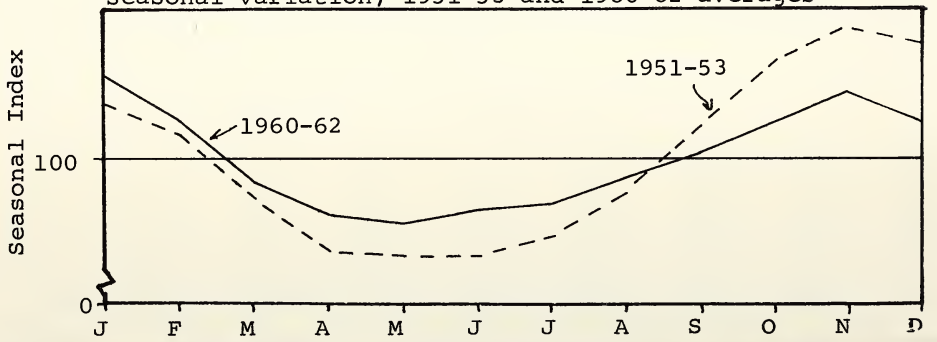


Table 13. Cotton prices: Index numbers of seasonal variation, 1951-1962 and 1963 projected

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1951-62[1]	97.2	97.7	98.4	99.3	100.4	101.0	100.8	102.6	104.1	101.2	99.6	97.7
1951-53	100.7	100.9	99.9	100.8	99.7	101.6	100.5	98.7	100.1	98.8	99.8	98.5
1960-62[2]	95.9	95.1	95.0	97.1	100.1	100.9	100.9	103.8	105.2	104.2	101.9	99.9
1963	96.1	94.5	93.2	95.2	100.9	101.5	101.4	104.6	105.1	104.0	102.7	100.9

[1]Average irregular amplitude = 1.52 [2]r = -.439

Figure 13. Cotton prices: Index numbers of seasonal variation, 1951-53 and 1960-62 averages

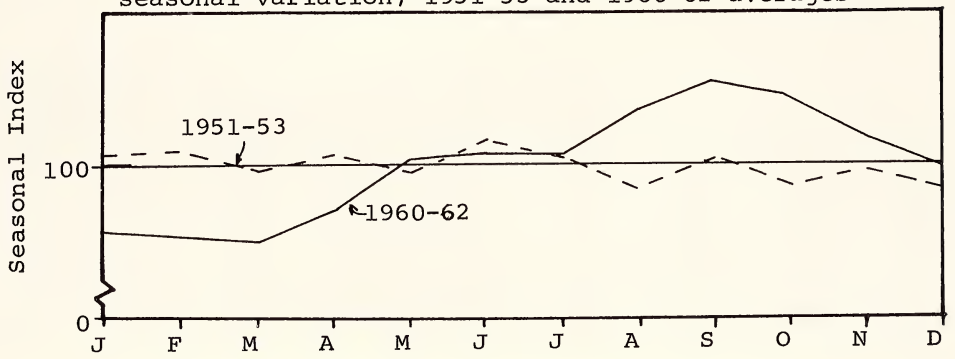


Table 14. Rice prices: Index numbers of seasonal variation, 1951-1962 and 1963 projected

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1951-62[1]	102.2	103.6	103.7	103.5	101.8	100.7	98.0	91.5	93.2	99.5	100.7	101.6
1951-53	104.4	104.7	104.2	104.1	104.4	102.9	99.5	89.5	86.7	96.6	99.6	103.3
1960-62[2]	101.8	103.7	103.6	104.3	101.0	101.3	99.8	90.8	92.7	98.5	101.7	100.9
1963	101.7	103.1	104.7	105.2	101.1	100.5	98.9	89.9	92.0	99.1	101.9	101.8

[1]Average irregular amplitude = 1.80 [2]r = .941

Figure 14. Rice prices: Index numbers of seasonal variation, 1951-53 and 1960-62 averages

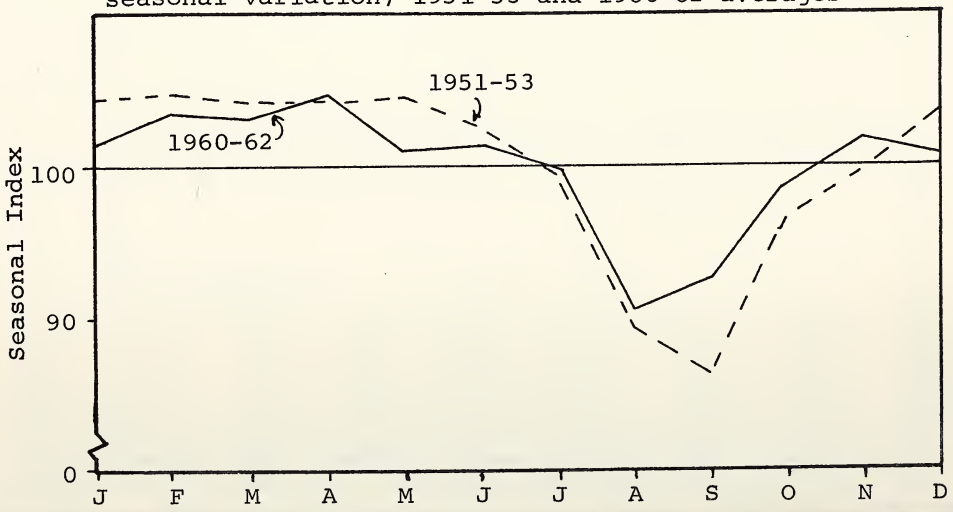


Table 15. Sweet potato prices: Index numbers of seasonal variation, 1951-1962 and 1963 projected

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1951-62[1]	105.2	105.6	109.0	113.8	112.3	112.5	130.3	88.2	76.6	69.6	75.0	101.8
1951-53	94.3	99.3	109.0	122.0	119.5	114.4	126.6	89.5	75.5	71.3	80.1	98.5
1960-62	104.0	103.8	108.9	112.7	114.9	117.5	123.9	96.4	80.0	72.2	70.9	95.0
1963	98.6	104.6	113.1	119.1	123.6	128.9	112.2	93.8	79.0	70.3	72.7	83.9

[1]Average irregular amplitude = 10.15 [2]r = .946

Figure 15. Sweet potato prices: Index numbers of seasonal variation, 1951-53 and 1960-62 averages

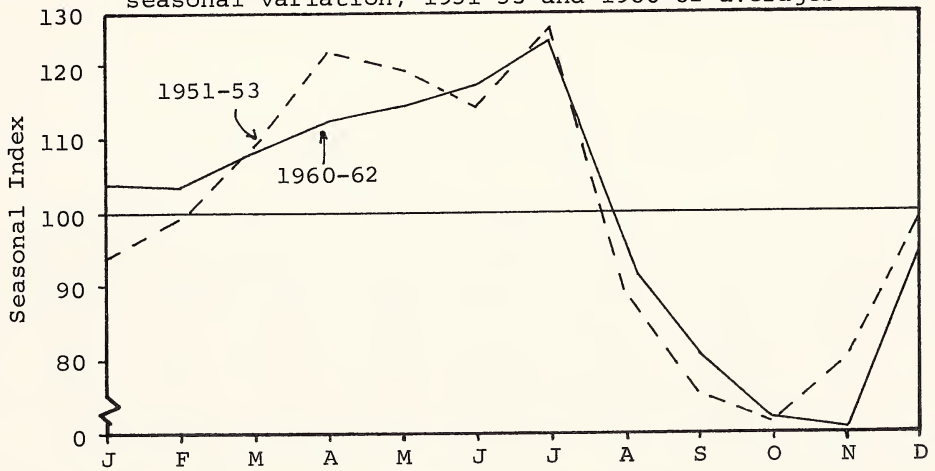


Table 16. Soybean prices: Index numbers of seasonal variation, 1951-1962 and 1963 projected

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1951-62[1]	96.4	99.1	103.8	108.6	109.7	107.0	103.5	99.9	92.6	91.8	93.1	94.5
1951-53	95.5	98.8	104.8	108.7	109.2	109.7	105.6	100.7	91.7	89.9	91.7	93.6
1960-62[2]	97.8	98.8	102.2	105.8	105.9	101.6	101.6	99.8	95.1	95.2	97.7	98.4
1963	97.7	98.7	103.0	105.0	105.5	100.8	101.1	99.7	94.1	94.9	98.5	101.1

[1]Average irregular amplitude = 2.22 [2]r = .921

Figure 16. Soybean prices: Index numbers of seasonal variation, 1951-53 and 1960-62 averages

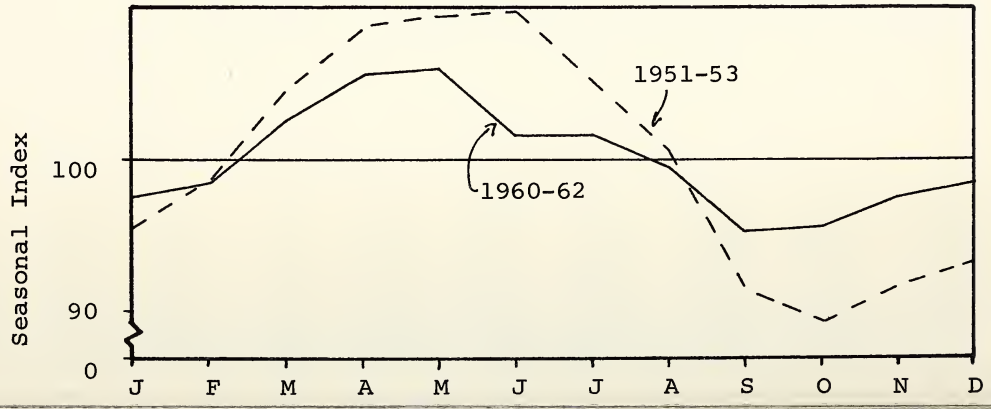


Table 17. Corn prices: Index numbers of seasonal variation, 1951-1962 and 1963 projected

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1951-62[1]	98.5	101.0	103.0	103.4	104.6	103.8	102.7	100.4	96.4	94.7	95.0	96.5
1951-53	100.3	103.7	103.0	104.5	105.0	102.8	100.6	97.3	94.6	94.9	95.3	97.9
1960-62[2]	98.0	99.6	102.8	102.8	103.1	104.2	102.2	101.1	97.4	95.5	95.7	97.5
1963	98.0	99.8	101.9	102.0	102.6	104.5	101.3	101.3	97.4	95.6	96.2	99.3

[1]Average irregular amplitude = 1.42 [2]r = .817

Figure 17. Corn prices: Index numbers of seasonal variation, 1951-53 and 1960-62 averages

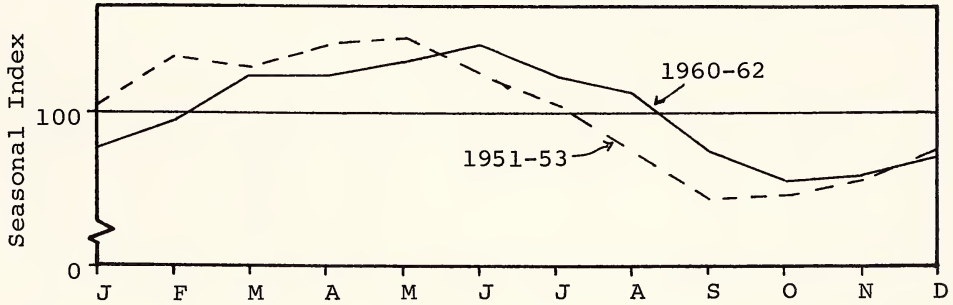


Table 18. Wheat prices: Index numbers of seasonal variation, 1957-1962 and 1963 projected

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1957-62[1]	102.4	101.1	101.5	101.8	99.9	96.6	97.2	99.0	99.4	99.3	100.2	101.6
1957-59	103.8	101.6	101.7	102.2	100.2	95.7	96.9	98.7	99.2	99.3	99.8	101.1
1960-62[2]	101.1	100.8	101.4	101.4	99.6	97.5	97.4	99.3	99.7	99.2	100.5	102.1
1963	100.3	100.8	100.2	99.8	98.3	99.4	98.7	100.1	99.8	98.5	100.7	103.4

[1]Average irregular amplitude = 1.15 [2]r = .893

Figure 18. Wheat prices: Index numbers of seasonal variation, 1957-59 and 1960-62 averages

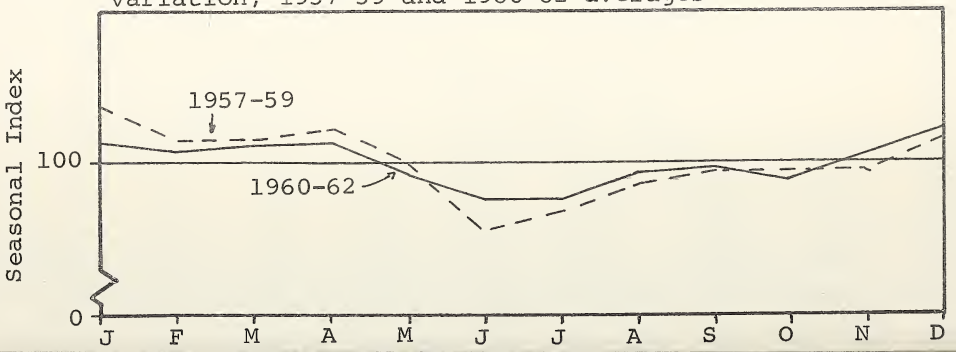


Table 19. Oat prices: Index numbers of seasonal variation, 1951-1962 and 1963 projected

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1951-62[1]	105.1	104.7	104.4	100.7	98.7	88.4	90.6	94.8	99.6	103.9	104.6	104.3
1951-53	106.5	107.2	105.9	99.9	97.9	86.7	88.1	91.5	98.4	102.4	107.7	107.8
1960-62[2]	102.6	103.1	102.6	99.4	98.8	93.5	94.5	98.3	99.4	105.3	101.3	101.0
1963	102.6	101.9	103.0	99.2	99.6	94.6	94.8	98.1	98.7	105.9	100.6	101.2

[1]Average irregular amplitude = 2.27 [2]r = .871

Figure 19. Oat prices: Index numbers of seasonal variation, 1951-53 and 1960-62 averages

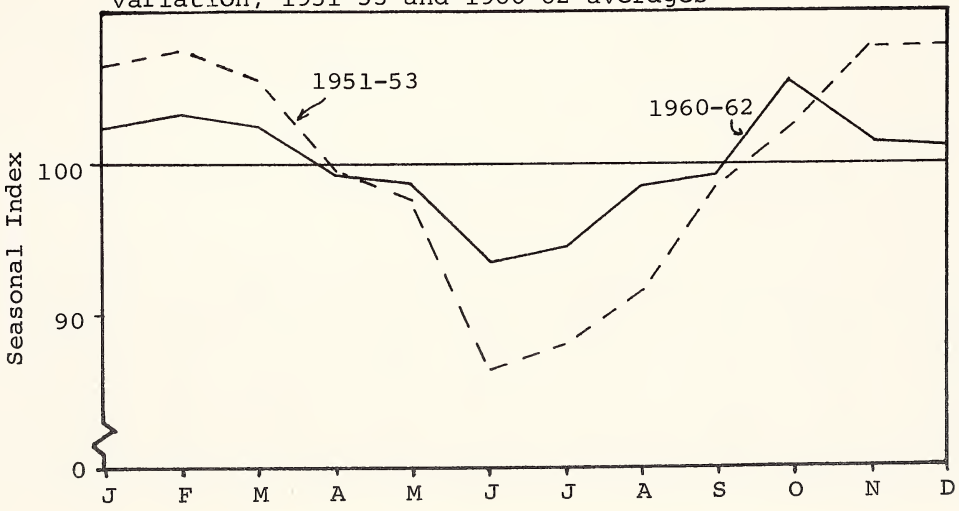


Table 20. All hay prices: Index numbers of seasonal variation, 1951-1962 and 1963 projected

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1951-62[1]	106.7	104.5	105.0	100.9	97.7	95.4	94.8	95.6	96.7	98.0	101.1	103.4
1951-53	109.2	102.0	107.1	100.2	96.7	92.7	92.1	96.6	95.5	98.9	103.8	105.1
1960-62[2]	105.2	102.8	101.8	101.0	96.6	97.9	97.3	97.7	99.5	97.6	100.2	102.5
1963	106.7	101.8	97.5	100.6	97.7	98.5	95.2	98.7	101.8	98.7	100.7	102.0

[1]Average irregular amplitude = 2.64 [2]r = .853

Figure 20. All hay prices: Index numbers of seasonal variation, 1951-53 and 1960-62 averages

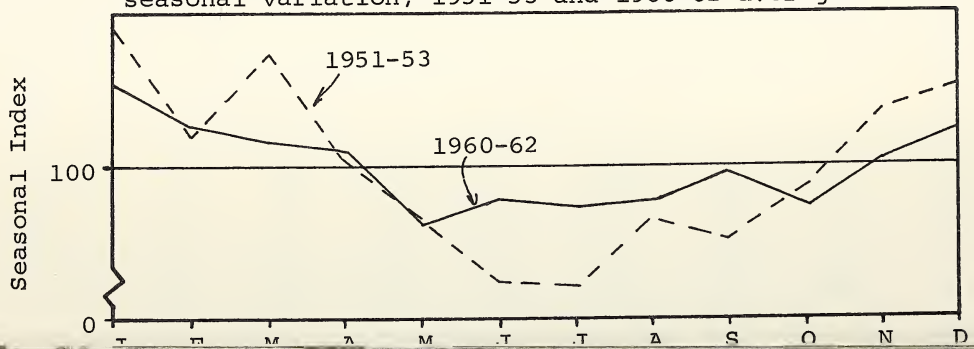


Table 21. Alfalfa hay prices: Index numbers of seasonal variation, 1951-1962 and 1963 projected

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1951-62[1]	108.1	108.7	105.9	101.4	98.1	93.5	93.0	92.7	94.7	97.5	101.4	105.1
1951-53	112.8	111.6	105.7	100.4	96.2	89.2	89.4	91.3	95.1	98.7	103.5	106.2
1960-62[2]	103.6	104.9	103.4	101.8	96.1	97.1	97.5	96.3	97.5	97.6	100.8	103.4
1963	103.1	104.4	100.1	101.7	95.5	97.6	97.2	98.0	99.6	98.5	100.1	104.0

[1]Average irregular amplitude = 2.43

[2]r = .907

Figure 21. Alfalfa hay prices: Index numbers of seasonal variation, 1951-53 and 1960-62 averages

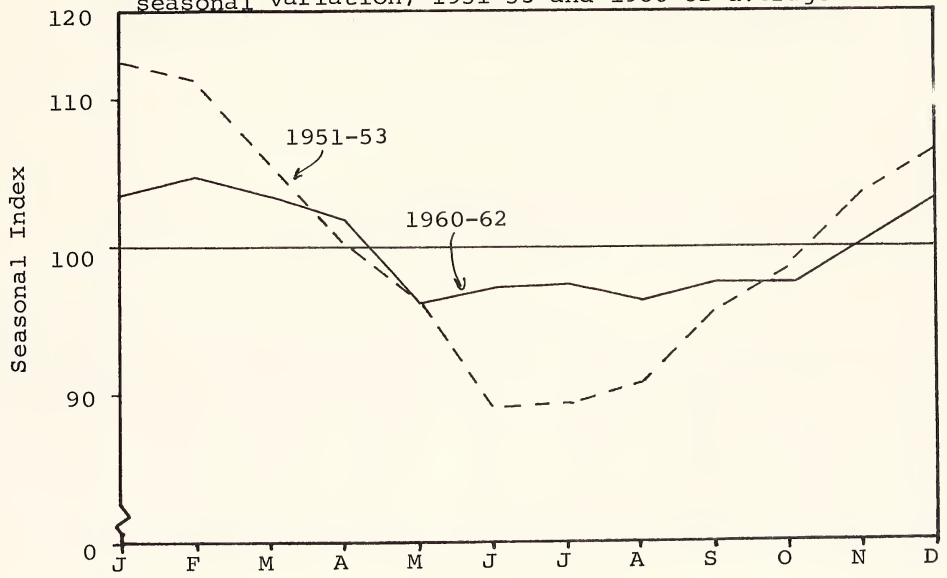


Table 22. Lespedeza hay prices: Index numbers of seasonal variation, 1951-1962 and 1963 projected

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1951-62[1]	105.0	104.0	104.8	100.2	96.8	96.5	97.7	96.4	95.9	99.1	101.9	101.2
1951-53	107.9	106.7	106.7	100.3	96.4	92.6	92.2	96.7	92.7	98.4	104.4	105.0
1960-62[2]	102.3	100.5	103.4	101.5	95.7	99.6	101.1	98.5	99.3	99.6	100.8	97.9
1963	102.5	99.6	100.3	101.9	96.3	100.6	100.4	98.5	101.3	100.7	100.7	97.2

[1]Average irregular amplitude = 3.23

[2]r = .432

Figure 22. Lespedeza hay prices: Index numbers of seasonal variation, 1951-53 and 1960-62 averages

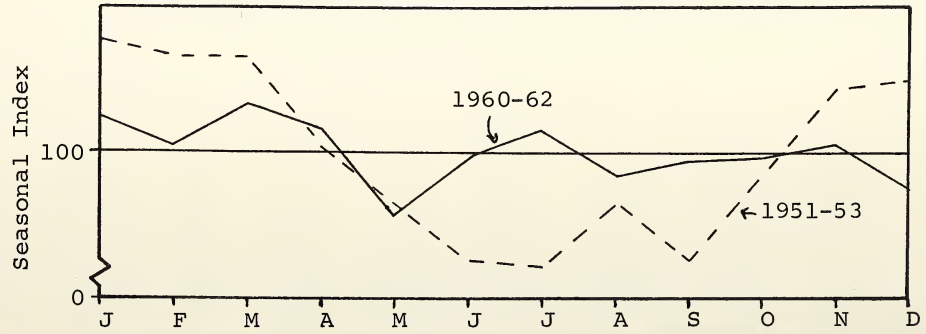


Table 23. Grain sorghum prices: Index numbers of seasonal variation, 1951-1962 and 1963 projected

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1951-62[1]	98.8	99.2	101.1	102.5	103.7	103.0	104.1	101.6	97.9	94.9	95.4	97.5
1951-53	100.8	100.3	100.9	100.8	102.0	99.5	100.7	101.8	100.3	96.5	97.4	99.0
1960-62[2]	98.2	99.2	101.6	103.0	103.8	103.6	104.0	99.9	96.9	95.6	96.1	98.0
1963	98.0	98.9	101.5	102.6	103.2	102.5	103.3	99.1	98.4	96.7	96.7	99.0

[1]Average irregular amplitude = 1.21

[2]r = .656

Figure 23. Grain sorghum prices: Index numbers of seasonal variation, 1951-53 and 1960-62 averages

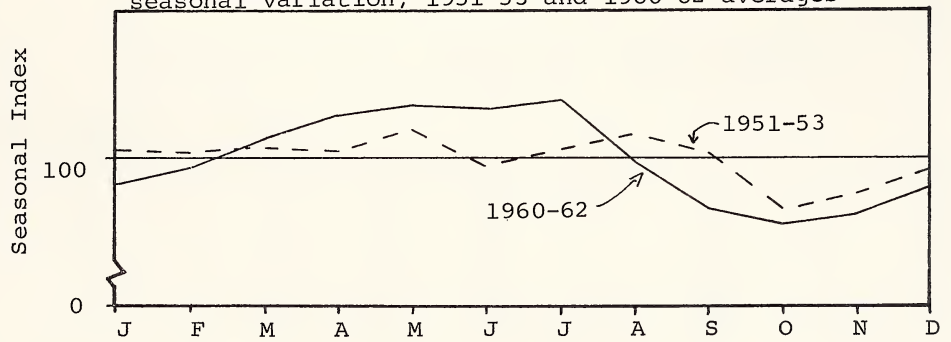


Table 24. Cattle slaughtered: Index numbers of seasonal variation, 1951-1962, and 1963 projected

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1951-62[1]	102.9	81.7	87.3	87.7	98.9	105.4	109.8	109.6	106.6	112.8	105.0	92.3
1951-53	112.0	88.2	92.7	83.7	90.2	93.5	101.1	105.5	106.8	120.1	111.1	95.0
1960-62[2]	100.0	80.3	87.1	85.9	105.1	109.4	114.8	116.0	105.8	108.3	99.8	87.6
1963	100.0	80.6	91.7	82.0	106.6	104.2	109.1	124.3	106.2	109.2	103.3	82.9

[1]Average irregular amplitude = 5.44 [2]r = .550

Figure 24. Cattle slaughtered: Index numbers of seasonal variation, 1951-53 and 1960-62 averages

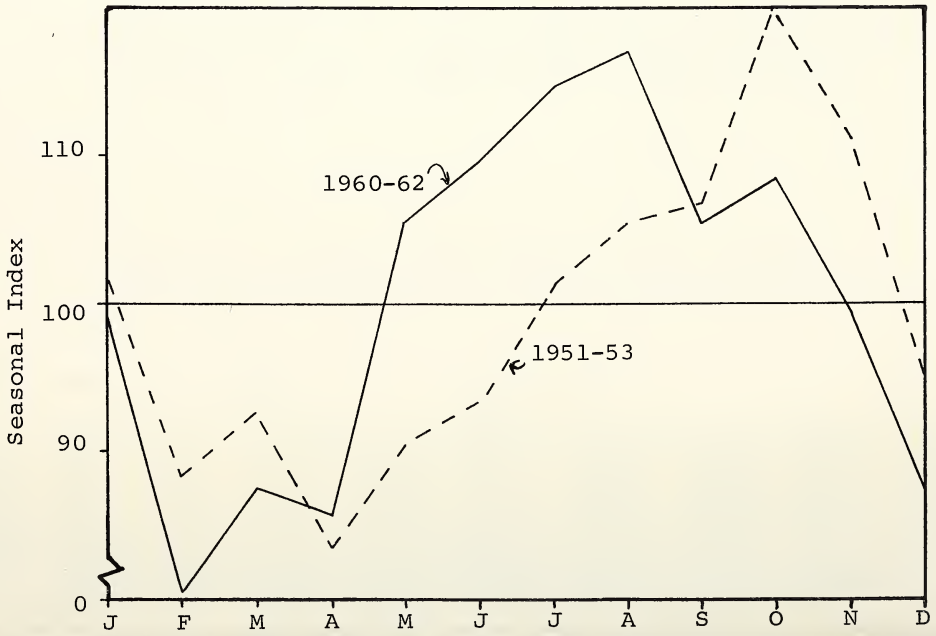


Table 25. Calves slaughtered: Index numbers of seasonal variation, 1951-1962, and 1963 projected

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1951-62[1]	93.8	77.2	82.3	81.9	94.9	101.8	108.9	117.3	117.3	121.7	108.9	94.0
1951-53	92.1	72.6	75.8	75.0	87.5	98.0	110.7	121.5	121.5	131.2	116.3	97.7
1960-62[2]	92.8	85.5	90.7	86.0	98.4	104.5	103.2	115.7	114.3	112.6	104.8	91.7
1963	90.9	88.7	93.5	86.9	101.9	102.6	100.3	115.4	113.5	111.7	103.1	91.5

[1]Average irregular amplitude = 4.07 [2]r = .924

Figure 25. Calves slaughtered: Index numbers of seasonal variation, 1951-53 and 1960-62 averages

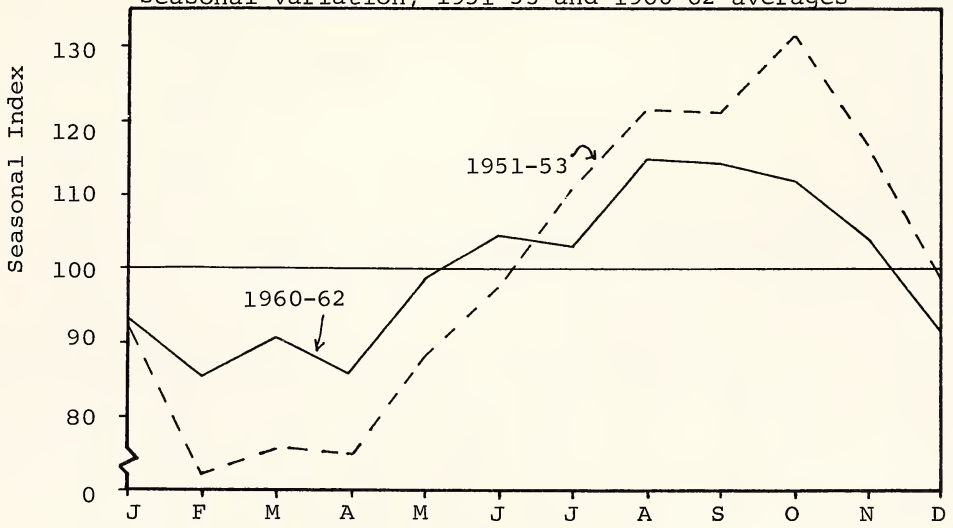


Table 26. Hogs slaughtered: Index numbers of seasonal variation, 1951-1962 and 1963 projected

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1951-62[1]	132.6	104.8	103.3	90.9	82.4	72.7	69.7	79.2	90.1	111.9	122.5	139.7
1951-53	146.0	109.7	103.4	91.7	70.1	61.1	59.5	75.0	88.4	118.2	126.5	150.5
1960-62[2]	124.5	100.7	105.0	89.1	92.0	85.3	78.2	86.2	89.9	106.6	117.7	124.8
1963	124.3	99.1	102.3	86.2	95.0	88.4	77.8	88.8	86.9	109.0	119.5	122.8

[1]Average irregular amplitude = 5.73 [2]r = .964

Figure 26. Hogs slaughtered: Index numbers of seasonal variation, 1951-53 and 1960-62 averages

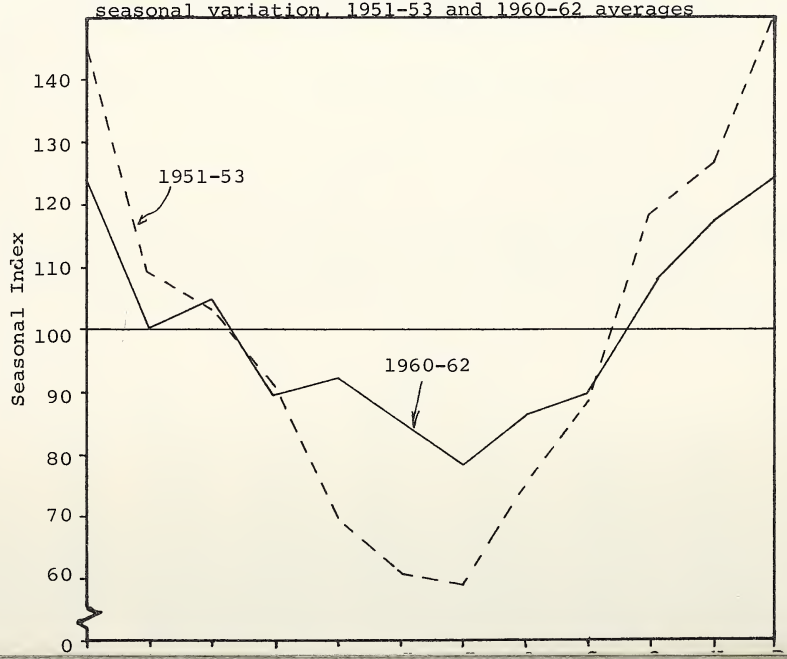


Table 27. Egg production: Index numbers of seasonal variation, 1951-1962 and 1963 projected

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1951-62[1]	89.9	98.6	127.1	126.5	122.1	104.4	96.9	91.2	87.0	89.4	82.3	84.5
1951-53	85.4	103.0	138.6	137.1	131.3	108.8	95.2	87.6	82.6	83.5	73.0	73.9
1960-62[2]	91.6	94.5	117.2	118.0	116.5	102.5	97.3	93.0	91.4	95.7	90.5	91.6
1963	88.2	93.2	117.5	117.4	116.3	102.7	98.1	92.9	91.4	96.4	92.4	93.5

[1]Average irregular amplitude = 1.73 [2]r = .965

Figure 27. Egg production: Index numbers of seasonal variation, 1951-53 and 1960-62 averages

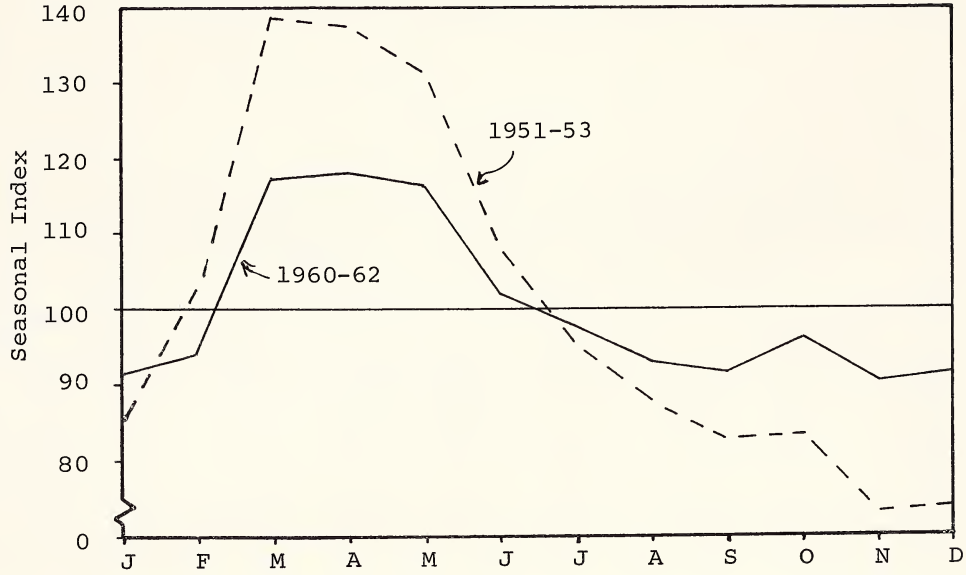


Table 28. Eggs per 100 layers: Index numbers of seasonal variation, 1951-1962 and 1963 projected

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1951-62[1]	86.5	96.4	124.6	125.2	124.1	108.7	102.0	95.6	88.2	87.8	79.8	80.9
1951-53	81.2	100.9	136.1	136.3	132.1	112.2	101.2	93.0	84.6	82.0	70.3	70.2
1960-62[2]	89.5	93.0	115.3	115.6	118.1	106.5	102.9	98.1	91.7	93.2	87.7	88.4
1963	87.5	92.4	116.5	114.8	117.6	106.7	103.2	98.0	91.5	93.8	88.8	89.3

[1]Average irregular amplitude = 1.35 [2]r = .968

Figure 28. Eggs per 100 layers: Index numbers of seasonal variation, 1951-53 and 1960-62 averages

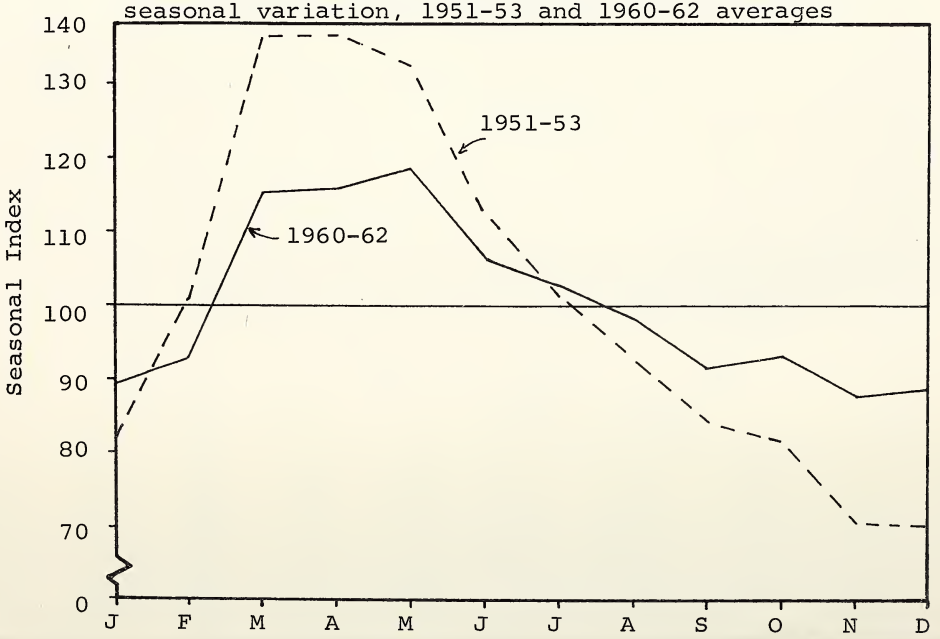


Table 29. Number of layers: Index numbers of seasonal variation, 1951-1962 and 1963 projected

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1951-62[1]	103.7	102.2	101.9	100.5	98.2	95.9	94.8	95.6	98.6	101.2	102.8	104.4
1951-53	104.7	102.4	101.5	99.7	98.9	97.1	94.7	94.4	97.2	101.2	103.5	104.7
1960-62[2]	102.2	101.2	102.1	101.6	98.8	96.1	94.4	95.4	99.6	102.0	102.8	103.9
1963	101.1	100.2	101.5	101.6	98.9	96.3	94.8	95.5	99.6	102.2	103.5	104.8

[1]Average irregular amplitude = 0.71

[2]$r = .924$

Figure 29. Number of layers: Index numbers of seasonal variation, 1951-53 and 1960-62 averages

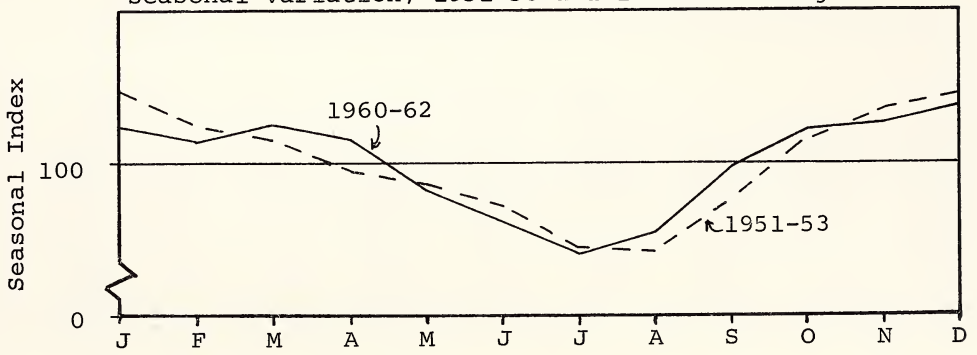


Table 30. Cattle-corn ratios: Index numbers of seasonal variation, 1951-1962 and 1963 projected

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1951-62[1]	101.7	102.5	101.6	102.5	101.1	96.8	97.1	97.9	101.7	99.9	98.6	98.5
1951-53	102.8	101.5	102.5	103.6	101.8	97.9	97.5	99.5	101.6	96.5	97.5	97.3
1960-62[2]	101.2	103.4	101.8	101.3	100.7	95.9	98.4	96.9	102.1	101.0	99.0	98.3
1963	102.3	104.5	102.3	100.8	100.9	94.1	99.0	96.5	102.9	101.1	98.4	97.2

[1]Average irregular amplitude = 2.33 [2]r = .626

Figure 30. Cattle-corn ratios: Index numbers of seasonal variation, 1951-53 and 1960-62 averages

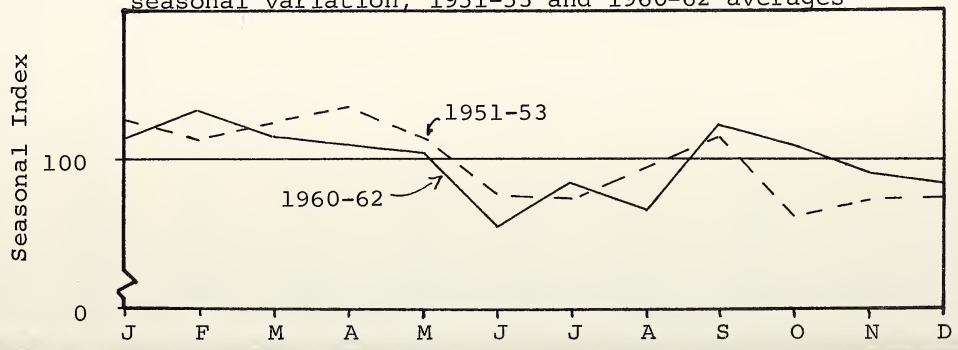


Table 31. Calf-corn ratios: Index numbers of seasonal variation, 1951-1962 and 1963 projected

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1951-62[1]	101.9	101.2	100.4	102.4	102.1	98.9	98.7	98.6	100.7	99.3	97.1	98.6
1951-53	102.6	101.3	101.4	102.5	103.0	101.1	100.4	103.0	100.0	94.8	94.0	95.8
1960-62[2]	102.3	102.2	100.0	101.7	101.9	96.0	98.7	95.9	100.6	100.6	99.5	100.8
1963	104.3	102.8	101.1	101.6	101.1	93.9	97.7	95.2	101.1	101.3	99.3	100.7

[1]Average irregular amplitude = 2.07 [2]r = -.018

Figure 31. Calf-corn ratios: Index numbers of seasonal variation, 1951-53 and 1960-62 averages

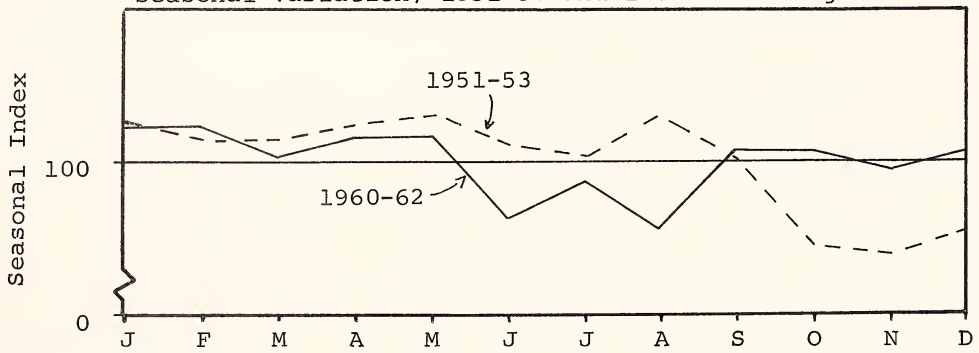


Table 32. Hog-corn ratios: Index numbers of seasonal variation, 1951-1962 and 1963 projected

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1951-62[1]	95.9	95.4	94.3	96.4	97.2	98.9	101.0	103.9	106.4	106.4	104.6	99.7
1951-53	93.6	92.6	94.2	93.7	98.1	100.7	104.0	109.4	108.2	106.0	103.0	96.4
1960-62[2]	97.5	96.4	96.8	97.3	97.2	94.8	99.1	101.2	104.8	106.5	106.2	102.3
1963	99.8	97.2	97.8	96.9	96.7	93.1	99.2	100.2	105.8	107.0	104.9	101.4

[1]Average irregular amplitude = 2.51 [2]r = .649

Figure 32. Hog-corn ratios: Index numbers of seasonal variation, 1951-53 and 1960-62 averages